25: Canonge L-5 (1948) 1957 NO6 Comanche NO6
Oklahoma

DOD International Journal of American Linguistics

EDITOR
C. F. VOEGELIN
Indiana University

ASSOCIATE EDITORS

PAUL RIVET
Paris

HANS VOGT
Oslo

WILLIAM THALBITZER
Copenhagen

FANG KUEI LI
University of Washington

REVIEW EDITOR
HARRY HOIJER
University of California, Los Angeles

VOLUME 23
1957

Published at the Waverly Press, Inc.
Mt. Royal and Guilford Aves.,
Baltimore 2, Md.
by Indiana University
under the auspices of
Linguistic Society of America
American Anthropological Association
with the cooperation of
Joint Committee on American Native Languages

[title page]

25: Canonge L-5 (1948) 1957 NO6 Comanche NO6
Oklahoma

VOICELESS VOWELS IN COMANCHE

ELLIOTT D. CANONGE
SUMMER INSTITUTE OF LINGUISTICS

0. Introduction
1. Contrast in identical environment
2. Contrast in analogous environment
3. Pre- and/or post-syllabic vocoids
4. Rigg's interpretation B

194
121

0. To date, several published articles on Comanche[1] have postulated phonemic voiceless vowels in syllabic position. In spite of these reports, however, the phonemic interpretation of such vocoids as voiceless vowels is still considered an improbability by some scholars. In order to allay the general doubt expressed by Jakobson, for example, in the first printing of his 'Preliminaries', as to the existence of phonemic voiceless vowels in any language, I supplied him with tapes containing such sounds. In his second printing, he added spectrograms[2] illustrative of the difference between Comanche /i/ and /I/ occurring on these tapes but in spite of the contrast therein, which can readily be seen by inspection, he retained his scepticism as to their phonemic inter-

[113]

[1] Joseph B. Casagrande, Comanche Linguistic Acculturation: I, IJAL 20.140 (1954); Henry Osborn and William A. Smalley, Formulae for Comanche Stem and Word Formation, IJAL 15.93 (1949); Venda Riggs, Alternate Phonemic Analyses of Comanche, IJAL 15.229 (1949); William A. Smalley, Phonemic Rhythm in Comanche, IJAL 19.297 (1953).

[114]

My own analytical research on this particular feature in Comanche has continued intermittently since 1948, when the data were presented to a seminar of the Summer Institute of Linguistics.

[115]

Numerous informants have been used, chief of whom is Mrs. Emily Riddles, Walters, Oklahoma, whose patience has been greatly appreciated. I am also indebted to Kenneth L. Pike for numerous leads and practical suggestions in the preparation of this paper.

[113]

[2] Roman Jakobson, Preliminaries to Speech Analysis, Acoustics Laboratory, MIT, Report no. 13, (1952), Second Printing, 52, Fig. 12.

[p. 63-A]

194 121 pretation: "Vowels are normally voiced. It is still questionable whether there are languages in which parallel to the consonantal opposition voiced vs. voiceless, there actually is a similar distinctive opposition of voiced and murmured vowels, as reported about a few American Indian languages, e.g. Comanche. Either the vocal murmur is not a distinctive feature and functions merely as a border mark, or it may be a concomitant of the tense-lax opposition."[3]

This article, therefore, is an attempt to supply more extensive data and argumentation on this point than previous authors have given, since to me it appears conclusive that, in Comanche, voiceless (or 'whispered') vowels in syllabic position are phonemic. The interpretation of phonetic voiceless vocoids in pre- and/or post-syllabic position will also be discussed.

194 1. The phonemic contrast of voiced and voiceless vocoids in syllabic position can be seen in their occurrence in identical environment. Here, surely, no conditioning factor is present. Note, for /e/ versus /E/, ʔuˈkuʔ-okʷekʷaiʔuʔ *she went to render it*, (e.g. *lard*), ʔuˈkuʔokʷEkʷaiʔuʔ *she rendered it and went on*. In these two examples, the stress, length, pitch, rhythm, and phonological junctures are the same. The grammatical structure is also comparable: each begins with the morpheme ʔu- *object, 3d per. sing.*, followed by the morpheme ku- *heat as an instrument*; following the stem in each is the morpheme -kʷa *movement away*, the morpheme -i *past tense*, and the morpheme -ʔuʔ *subject, 3d per. sing.* The stem ʔokʷe means *a flowing or liquification with purpose directed toward the motion indicated*

194 193 196

[3] Idem. 26.

[p. 63-B]

194 196 193 *in the following morpheme*, whereas the stem ʔokʷE is a complex stem composed of ʔokʷe modified by the addition of the morpheme comprised phonetically of stem final unvoicing, and which has the semantic implication of *stem meaning resulting in action indicated by the following morpheme.*

194 Brought about by the occurrence of this same stem-final-unvoicing morpheme, and preceding -ki *movement toward*, similar contrasts between voiced and voiceless vowels can be observed, e.g. 'norĩnakiki?u? *he came to pack* versus 'norĩnakIki?u? *he packed and came on.* Again, no phonological or morphological conditioning factors are present. Similar contrasts can be seen in 'mayakeki?-u? *he came to play* (e.g. *the piano*), 'mayakEki?u? *he played and came on*; ?u'hanikĩki?u? *he came to fix it for him* versus ?u'hanikĨki?u? *he fixed it for him and came on*; ?u'ni?aciki?u? *he came to advise him* compared with ?u'ni?acIki?u? *he advised him and came on.* Another contrast preceding -kʷa can be observed in 'namaka?-mukikʷai?u? *he went to dress himself* versus 'namaka'mukIkʷai?u? *he dressed himself and went on.* -ki and -kʷa are interchangeable in any of the illustrations listed above.

2. Utilization of analogous data should prove profitable, contrasting /u/ /U/, /o/ /O/, /e/ /E/. Thus ?u'?uhtuki?u? *he came to give to her* contrasts with ?u'?-utUki?u? *he gave to her and came on*; 'nohkoki-?u? *she came to bake biscuits* with 'nokOki?u? *she baked biscuits and came on*; and ?u'-manahkeki?u? *he came to measure it* with ?u'manakEki?u? *he measured it and came on.* These same stems occur with similar resultant contrasts preceding -kʷa.

Nothing in these word pairs is of such a nature or in such a position as to make a non-phonemic conditioning variation from voiced to voiceless a characteristic of the vowel. The theoretical possibility of /U/ /O/ being conditioned by voiced equivalents occurring in contiguous syllables preceding these voiceless vowels is partially eliminated

[p. 64-A]

194 by the occurrence of /E/ in a similar construction in which the preceding voiced vowel is not identical with it, that is, /a/. Instances of vowel assimilation have been observed, e.g. -ru?I *future tense* occurs as -ro?I in 'nohkoro?I?u? *she is going to bake biscuits*. Here, however, a change of vocalic timbre is involved rather than a change of voiced to voiceless. A more pertinent analogy may be noted in 'sikItī?u? *it is here*, 'sokOrī?-u? *it is over there*, 'sukUrī?u? *it is out of sight* and might seem to imply some sort of vowel agreement. However, e, indicating *scattered items*, occurring in a similar construction, results in 'sekItī?urīī *they are here and there*, not *'sekEtī?urīī.

Furthermore, limited instances of the occurrence of /U/ and /O/ in environments in which neighboring voiced vowels are not of the same vocoidal timbre with them have been observed, e.g. ?u'hotUkonīī *its hindquarters* and 'tuukOnenī?'ʁuni? *I saw a black cradle*, in which the voiceless phoneme /U/ is preceded and followed noncontiguously by voiced /o/, and in which the voiceless phoneme /O/ is preceded and followed noncontiguously by voiced /u/ and /e/ respectively.

The influence of neighboring voiced vowels as a criterion for predicting the distribution of the particular vocalic timbre of the voiceless vowels can be ruled out since voiceless vowels occur in contrast in identical environment where no conditioning element is present, as in '?ica?nī'rīīpI *this is my stone* compared with '?ica?nī'rīīpE *this is my mouth*; and in nonconditioning analogous environment, e.g. '?ica?nī'kīīkA *this is my onion*, '?ica?nī'hīīkI *this is my arbor*, '?ica?nī'?eekO *this is my tongue*.

In the analogy '?uhtu-, '?utU-; 'nohko-, 'nokO-; the presence or absence of /h/ (phonetically [U] or [O] in these instances) as a possible conditioning factor can be discounted since /h/ does occur (though rarely) contiguous to a syllable containing a voiceless vowel syllabic, as in nī'?uhtU *give it to me* compared with 'kimA *come!* or '?ica?nī'-

[p. 64-B]

194 wahcĪ *this is my rib* versus 'ʔicaʔnĪ'nakI *this is my ear.*

It may be noted here, furthermore, that there is frequently morpho-phonemic alternation between a pre-consonantal /h/ and a post-consonantal voiceless vowel preceding certain suffixes. Compare the stem alternants 'pohpi- and 'popI- before the suffix -tuʔI *future tense* and -ci *dependent completed action by the subject* in the illustrations 'pohpituʔIniʔ *I am going to jump* and 'popIciniʔ'miaruʔI *having jumped, I will go.*

The contrast /a/, /A/ is extremely rare due to the low frequency of occurrence of /A/ and its frequent morpho-phonemic alternation with /Ī/. Whereas the analogies 'pohpi-, 'popI-; 'coʔme-, 'coʔmE-; 'ʔuhtu-, 'ʔutU- preceding -ki, -kʷa and other morphemes are common, the analogy 'tihka-, *'tikA- would be erroneous. Rather, the second form would be 'tikĪ-. However, preceding -ci *dependent completed action by the subject* and ci, a syllable in the stem 'niʔaci- *to advise*, a valid contrast can be observed, e.g. 'miʔAciniʔ'tihkaruʔI *having gone, I will eat* versus ʔu'niʔaciki?uʔ *he came to advise him.*

128 The preceding illustrations have given crucial contrastive data for each of the six vowel pairs. The following miscellaneous sets of forms supplement those given above and the phonemicization postulated in reference to them.

194 In the first set of examples, the contrast between /i/, /I/ occurs following stops and preceding the identical morpheme -nĪĪ *plural*, e.g. 'papinĪĪ *heads*, 'nakInĪĪ *ears*,
194 'tiʙoowapInĪĪ *teachers*, 'toʔInĪĪ *pipes*. Note that it was a pair of this type which Jakob-
114 son used for his spectrographic analysis: 'tirīʔaiwapInĪĪ *hired hands* and 'tipinĪĪ
114 *stones*. At the time the tape was sent to him, the minimal pairs quoted above had not been discovered and none occur in the data of Riggs and Smalley. Nevertheless, the earlier data of contrast in analogous (non-conditioning) environment appeared to all

[p.65-A]

114 of us conclusive even before the newer minimal pairs had been discovered and which have been included above.

194 In a specialized verb compound composed of noun plus verb, /i/, /I/ contrast preceding juncture in the set 'papiwĩnĬkatĩnĩʔ *I have a headache* compared with 'nakIwĩnĬkatĩnĩʔ *I have an earache.*

As the first syllable of a two syllable stem, the contrast /i/, /I/ may occur in stem syllables *not* contiguous to another morpheme following, as in the set 'tĩkʷiɒukitĩʔuʔ *he is whipping* (*something*) compared with ʔu'kĩkʷIya'etiʔuʔ *he habitually tastes it.* Here, the stem in the second instance is -kʷIya- so that the unvoicing is not a product in this instance of a change at morpheme boundaries. Possible conditioning by the morpheme kĩ- *use of mouth or teeth* preceding, can be discounted by 'kĩʔokʷetĩʔ-uʔ *he is slobbering,* in which the vowel in the syllable following kĩ- is voiced, i.e. /o/.

Though the morphemes -kĩ *benefactive* and -ki *movement toward* differ morphologically, in the following set they present a phonologically nonconditioning environment in which to contrast /e/, /E/, e.g. ʔu'-wĩhtokʷekitĩʔuʔ *he is killing for her* versus ʔurii'wĩhtokʷEkitĩʔuʔ *he is killing them and coming on.*

The next sets of illustrations show contrast between /i/ and /I/. They can be observed, for example, preceding -ka *stative* and -ʔe *habitual* in ʔu'karĩkĩʔetiʔuʔ *she habitually cooks it* compared with ʔu'karĩkĬ-katiʔuʔ *she is cooking it.* Note also the occurrence of voiced /I/ preceding -ruʔI *future tense* compared with the voiceless phoneme /I/ within a complex verb stem, as in the constructions 'pitĩruʔIʔuʔ *he will arrive* and 'patĬrĩyaaiʔuʔ *he drowned.* Preceding the dependent clause clitic -ku *dependent action being performed by secondary subject* and -ka, a like clitic denoting *completed dependent action,* a similar contrast is noted, e.g. ʔuhkaʔu'karĩkĩkumaʔ'miʔaʔI *as she was boiling that, he went* versus ʔuhkaʔu'karĩkĬkamaʔ'miʔaʔI *when he boiled that, he went.*

[p. 65-B]

194 Contrast in a slightly different type of situation can be seen in the following instances in which /ĭ/, /Ĭ/ occur in syllables immediately preceded by morphemes, e.g. following nĭ- *person* and wĭ- *instrumental* in 'nĭpĭkarĭ?u? *he is burying someone* and ?u'wĭpĬkarĭ?u? *he is cutting it open*. However, stem syllables do not always unvoice following wĭ- as in ?u'wĭnucai?u? *he broke it up* compared with ?u'wĭnĬkĭ?i?u? *he tightened it*. The phonetic similarity of the syllable ka immediately following the contrast in the first set presents a valid non-conditioning environment in which to compare the occurrence of /ĭ/, /Ĭ/. Furthermore, ka in each instance is a part of different unrelated stems (-pĭka- *to bury*, -pĬka- *to cut open*) so that no morpheme boundary is involved.

Another type of analogical data is herewith mentioned, e.g. ?u'wĭminaru?I?u? *he will break it* compared with ?u'wĭmInaru?-I?u? *he will get sick over it*. The second example is written phonetically as [ʔu'wĭMInaru?I?u?]. This constitutes a legitimate contrast since the allophones [m], [M] are conditioned by their relationship to vowels and not vice versa. That is to say, the total distribution of the phones [M], [N], [R], [W], [Y], [ᵖ], [kʷ], as opposed to their allophonic voiced equivalents, is preceding voiceless vowels. These voiceless consonant phones do not contrast with their voiced equivalents at any point, whereas voiceless vowel phonemes do contrast with their voiced vowel phoneme equivalents following /p/, /t/, /k/, etc. Other examples are ?u'haniki?u? *he came to do it* compared with ?u'hanIki?u? *he did it and came on*; ?u'-rĭrĭnitĭ?u? *he told him to do something* versus ?u'rĭrĬnĭ?i?u? *he planted it*; and 'norĭnaki?u? *she packed up* compared with 'norĬnaki?u? *she came to make a bed*.

3. Phonetic voiceless vocoids in non-syllabic position are phonemically interpreted as consonantal /h/ because of their

[p. 66-A]

194 **noncontrastive phonetic characteristics.** In postposed position, e.g. ['paAkipɪ̆], /'pahkipɪ̆/ *leather*, ['wiInu], /'wihnu/ *then*, ['noOkopɪ̆], /'nohkopɪ̆/ *biscuits*, ['paAMU], /'pahmU/ *tobacco*, ['seEka], /'sehka/ *those here and there*, ['tɪ̄kapɪ̆], /'tɪ̄hkapɪ̆/ *meat*, such vocoids always occur contiguous to, and have the same vocalic timbre as the voiced vowel syllabic. Such sequences as *aɪ̆, *iU, *oE, with diverse timbre between voiced and voiceless, are structurally impossible in Comanche. In [cvV] syllables, the voiced vowel is clearly heard as the peak of sonority. Thus, the distribution of /h/ in 'pohpi- *to jump* parallels the distribution of the consonant /ʔ/ in 'naʔnīmɨ̄nɨ̄ *relatives*.

Similarly, pre-syllabic voiceless vocoids in utterance initial syllables, e.g. ['UuuUpI], /'huuhpI/ *tree*, ['AaʔniI], /'haʔnii/ *beaver*, ['ɪ̄ɪ̄kI], /'hɪ̄ɪ̄kI/ *brush arbor*, more closely parallel consonant distribution since all consonants except /n/ and /r/ occur utterance initially, whereas voiced vowels do not. In addition, the vocoidal timbre of the pre-syllabic element here is completely conditioned by that of the following voiced vowel so that no voccid sequence such as *Ia, *Ui, *Eo ever occurs.

Pre-syllabic voiceless vocoids also occur in the middle of words following /ʔ/, e.g., as in the sequence cvʔVv in ['naʔɪ̄muukU], /'naʔhīmuukU/ *safety pin*. Interpretation of [V] as /h/ in this position reasonably follows since this position is otherwise normally occupied by consonants. For example, note 'cīʔcīkiʔu? *he strangled*, ʔu'roʔnikaiʔu? *he put it away*. Here again, the voiceless vocoid in [cvʔVv] is completely conditioned by the following voiced vowel.

Phonetic voiceless vocoids occurring between voiced vowels have no distinguishing vocalic timbre, being phonetically colored at beginning and ending by the respective contiguous voiced vowels, as in 'nobituʔIniʔ *I am going to play*. Here, the phoneme /h/ is phonetically a vocoidal slur from a

[p.66-B]

194 rounded voiceless vocoid to an unrounded voiceless vocoid but with the total slur appearing to take no more time than another voiceless continuant consonant such as /s/. Thus, the illustration given here could be written phonetically in some such way as ['noOIi-], but without the implication of an additional mora of length. In this position also, there are no contrasting vocoid sequences such as *aOa, *aIa, *aUa.

Other characteristics have been observed which differentiate between phonemic voiceless vowels and phonetic voiceless vocoids interpreted as /h/. Voiceless vowel phonemes occur in open syllables only, as seen in 'kupIta? *a light*, 'pukukĬni *a stable*, 'nanUsa? *a chain*, whereas /h/ occurs contiguous to a voiced syllabic, opening or closing the syllable. In general, voiceless vowels maintain a full mora of length, though there often seem to be perceptible differences of length in reference to the different voiceless vowels occurring. Thus, /I/ of 'puhakĬni *a church* appears to be
194 shorter than /I/ of 'kupIta? *a light*. The
194 mora value of /h/, on the other hand, may
195 vary considerably, not in accordance with its vocoidal timbre, but under various conditions of stress, deliberation, speed of speech, style, etc. Thus, /h/ in 'wihnu *then* ranges from a sharp vocoid [I] in slow deliberate utterance to mere breathiness of almost no mora value in more rapid speech.

194 Voiceless vowels never occur in syllables preceded by pause or in stressed syllables. /h/ may occur in either, e.g. 'huuhpI *tree*.

194 4. Riggs[4] has stated a preference for her
114 Analysis B in which consonant clusters
121 resulting from post-syllabic h plus consonant are treated as unit phonemes, choosing to eliminate hc clusters at the price of nine new phonemes (or eleven phonemes, since hs and hy, not listed in her paper, also exist). To be consistent, one would also have to postulate a series of pre-glottalized con-

[4] Riggs, op. cit.

194 sonants for ?s, ?m, ?y, etc., which would
114 reduce the number of consonant clusters to
121 zero but would produce thirteen more new phonemes. All possible combinations of ? followed by a consonant occur except ??.

It is not economical to introduce twenty-three new phonemes into a system in order to eliminate two well-balanced types of consonant clusters, e.g. ?c and hc. In both clusters, the first element is a glottal consonant, namely a stop and a fricative.

[195] Such an analysis, furthermore, disregards the perceptible division between syllables which occurs even in rapid speech, and, in exaggerated slowdown, informants show no tendency to treat hc as a close-knit unit but, rather, introduce a sharp break between the h and the consonant following. It is by no means impossible to assume that a single phoneme can be ambi-syllabic. Numerous such instances may be found but, as between alternate analyses, that one is to be preferred which interprets phonemes as mono-syllabic, other things being equal.

The interpretation of hc as a single phoneme results in needless grammatical complication. For example, the utterance translated *just nothing* may occur with alternate nonsignificant word order, e.g. 'nah'kehenA or 'kehena'nah. Under Rigg's Analysis B, in which hk constitutes a single phoneme, the allomorph of the morpheme meaning *just* is 'nah (three segmental phonemes) in the second citation but in the first instance, the alternate is 'na plus a feature (pre-aspiration) of the following phoneme. If, on the other hand, the alternant is assumed to be 'na (without pre-aspiration) in the first example, then 'kehena *nothing* of the second utterance has an alternant ʰ'kehenA in the first. The total distribution of 'na and ʰ'kehenA is the strict limitation of their occurrence contiguous to each other. Considering hc as a consonant cluster, however, would eliminate all such allomorphic problems and greatly simplify the analysis of the grammatical structure.

[p.67-B]